Alg. 2 Warm Up #1-5

1. Find x-intercepts by factoring and using the zero product property:

$y = x^2 - 2x - 3$

2. Find the x- coordinate of the vertex half way between the x-intercepts.

3. How can you find the y value of the vertex?

4. Sketch the graph.

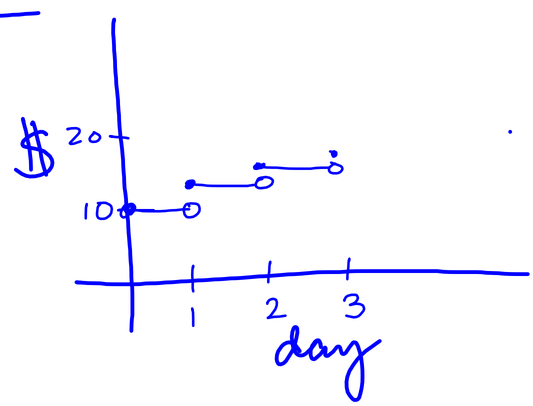
HW Questions:

1-12. Junior is saving money in his piggy bank. He starts with 10 cents and adds two pennies each day. Create an $x \rightarrow y$ table and a graph for the function for which x represents the number of days since Junior started saving money and y represents the total money he has saved.

end of

x	0	1	2
y	10	12	14

$y = 2x + 10$



1-13. Use the Zero Product Property and factoring, when necessary, to solve for x. The Math Notes box for Lesson 1.1.4 may be useful, if you need help.

a. $(x+13)(x-7)=0$

b. $(2x+3)(3x-7)=0$

c $x(x-3)=0$

d. $x^2-5x=0$ $\quad x(x-5)=0$ $\quad x=0,5$

e. $x^2-2x-35=0$

f. $3x^2+14x-5=0$

$(x-7)(x+5)$

$1\cdot 35$

$5\cdot 7$

step 1: $(3x\quad)(x\quad)$

2: $(3x\quad 1)(x\quad 5)$

$$\begin{array}{r} 15x \\ -\ 1x \\ \hline 14x \end{array}$$

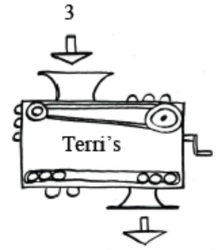
3: $(3x-1)(x+5)=0$

4. $3x-1=0$ or $x+5=0$

$3x=1$

$$\boxed{x=\frac{1}{3} \qquad x=-5}$$

1-14. Terri's project for the Math Fair was a magnificent black box that she called a function machine. If you put 3 into her machine, the output would be 8. If you put in 10, the output would be 29; and if you put in 20, it would be 59.



a. What would her machine do to the input 5? What about -1? What about x? Making an input $\rightarrow$ output table may help.

b. Write an equation for Terri's machine.

look for a pattern....

x	3	10	20
y	8	29	59

$y = 3x - 1$

1-15. Nafeesa graphed a line with a slope of 5 and a y-intercept of $(0, -2)$.

a. Find an equation for her line.

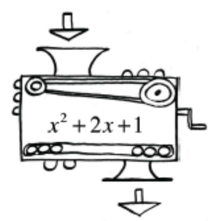
b. Find the value of x when $y = 0$.

1-16. In each of the following equations, what is y when $x = 2$? When $x = 0$? Where would the graph of each equation cross the y-axis?

a. $y = 3x + 15$

b. $y = 3 - 3x$

1-17. Carmichael made a function machine. The inner workings of the machine are visible in the diagram at right. What will the output be in each of the following cases?



a. If 3 is dropped in?

b. If –4 is dropped in?

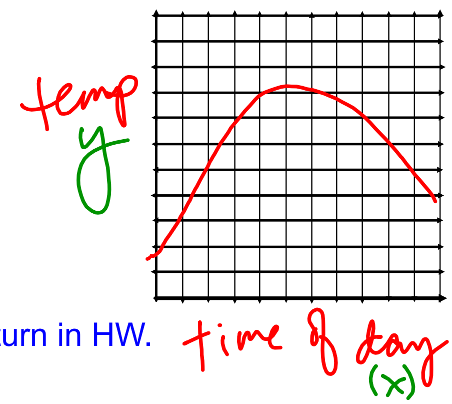
c. If –22.872 is dropped in?

1-18. Does the temperature outside depend on the time of day, or does the time of day depend on the temperature outside? This may seem like a silly question, but to sketch a graph that represents this relationship, you first need to decide which axis will represent which quantity.

a. When you graph an equation such as $y = 3x - 5$, which variable (the x or the y) *depends* on the other? Which is not dependent? (That is, which is *in*dependent?) Explain.

b. Which variable is *dependent*: temperature or time of day? Which variable is *independent*?

c. Sketch a graph (with appropriately named axes) that shows the relationship between temperature outside and time of day.



Reporter/Recorder collect and turn in HW.

Get out yesterday's Equation to Graph, White worksheet.

1. $y = 3x + 2$

2. $y = x^2 - 3$

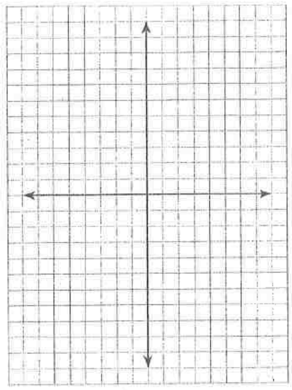
3. $y = -(x - 1)^2 + 4$

4. $y = \sqrt{x + 3}$

Alg 2A 1.1.2B Resource pg. Name ____________

Per. ____ Team # ______

Equation: $y = 3x + 2$

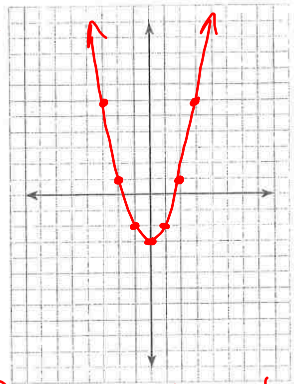


Important Points:

$0 = x^2 - 3$

Equation: $y = x^2 - 3$

x	y
0	0
±1	1
±2	4

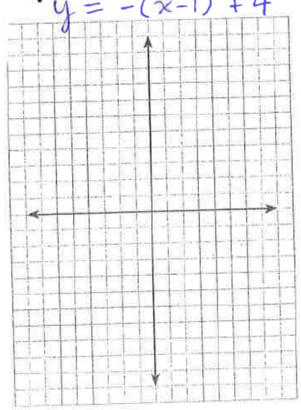


Important points:
vertex $(0,-3)$
x-int: $(\pm\sqrt{3}, 0)$

Domain:
Range:

(x) Domain: all real numbers, $\mathbb{R}$
(y) Range: $y \geq -3$

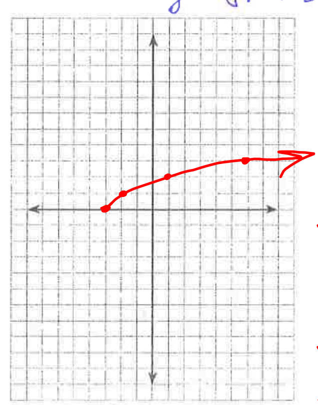
Equation: $y = -(x-1)^2 + 4$



x	y

Describe:

Equation: $y = \sqrt{x+3}$



x	y
-3	0
-2	1
1	2
6	3

$\sqrt{0} = 0$
$\sqrt{1} = 1$
$\sqrt{4} = 2$
$\sqrt{9} = 3$

Describe: Square Root
x-int: $(-3, 0)$ also a minimum point
Domain: $x \geq -3$
Range: $y \geq 0$
curved

Staple Week 1 classwork:

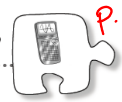
Warm up on top, face up!

1.1.2 B Worksheet

CP: 1-10

p. 9

1.1.2 How can I use my graphing calculator?



Using a Graphing Calculator to Explore a Function

In Algebra 1 you learned that multiple representations such as situations, tables, graphs, and equations along with their interconnections are useful for learning about functions. A graphing calculator can be a very useful tool for generating different representations quickly. Today, you will use this tool to explore a function. You will describe your function completely to the class.

1-10. Your team will use graphing calculators to learn about one of the following functions.

Team 1	*i.* $y = 2\sqrt{9-x} - 4$	Team 2	*ii.* $y = \sqrt{100-x^2}$
9	*iii.* $y = 3\sqrt{x+4} - 6$	4	*iv.* $y = 3\sqrt{4-x} - 3$
5	*v.* $y = -2\sqrt{25-x^2} + 8$		~~*vi.*~~ $\cancel{y = -3\sqrt{x+9} + 4}$
7	*vii.* $y = 2\sqrt{25-x^2} - 1$	8	*viii.* $y = \sqrt{4-x} - 1$

Your Task: Describe your team's function in as much detail as possible. Use your graphing calculator to help you generate a table and a complete graph of your function. Remember that drawing a complete graph means:

- Use graph paper.
- Scale your axes appropriately.
- Label key points.
- Plot points accurately.

As you work, keep your graphing calculators in the middle of your workspace, so that you can compare your screens and all team members can see and discuss your results. Be sure to record what you learn as you explore your function. As a team, you will be preparing a report about your function for the class. Consider the Discussion Points below as you work.

Discussion Points

What are the key points on the graph? Where are they exactly?

Can we identify at least five integer inputs that give integer values as outputs?

Are there values of *x* or *y* that do not make sense?

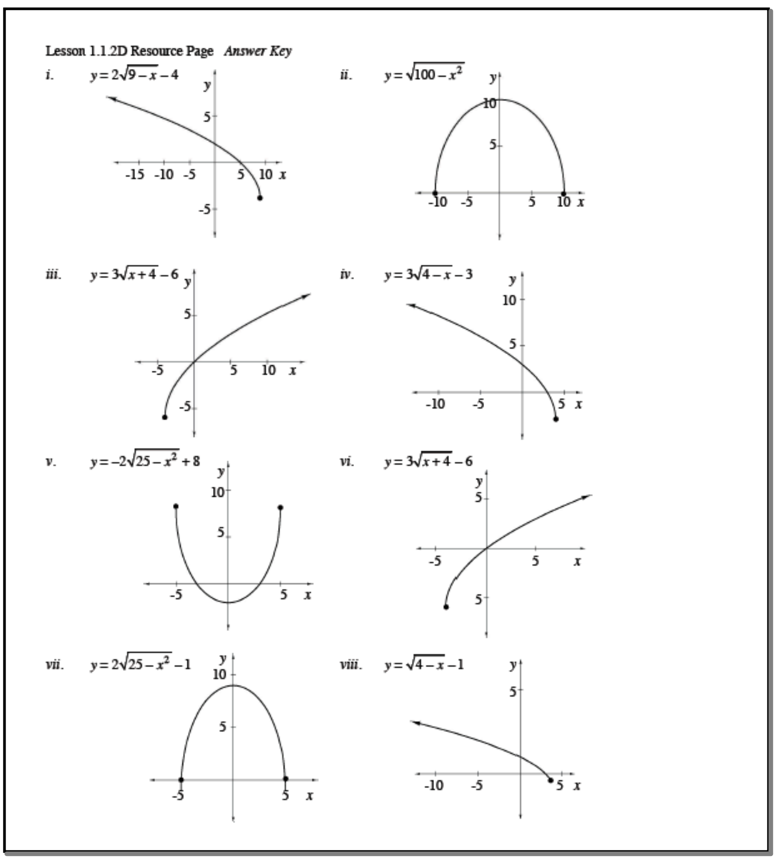
How high or low does the graph go?

Did the graphing calculator show an accurate graph?

How can we be sure the graph is complete?

HW: 1-

#19 ---> 25



Lesson 1.1.2D Resource Page *Answer Key*

i. $y = 2\sqrt{9-x} - 4$

ii. $y = \sqrt{100 - x^2}$

iii. $y = 3\sqrt{x+4} - 6$

iv. $y = 3\sqrt{4-x} - 3$

v. $y = -2\sqrt{25 - x^2} + 8$

vi. $y = 3\sqrt{x+4} - 6$

vii. $y = 2\sqrt{25 - x^2} - 1$

viii. $y = \sqrt{4-x} - 1$